

Applicant(s): Allan Scherr  
Serial No.: 10/036,547  
Filed: December 31, 2001

E30-050CON2 (96-031CON2)

In the Specification

Page 9, after line 14 insert the following:

B2 FIG. 1c depicts the general organization of a cache

management system.

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Please replace the paragraph beginning at Page 11, line 6 with the following:

B3 Figure 1a depicts a number of network sites or data nodes using the present invention. In a preferred embodiment, cache management system 10 includes a control device 12 and storage units 14. Control device 12, in this preferred embodiment, includes firmware that executes the logic of the present invention and acts as a cache memory manager for the cache memory management system. A cache management system 10 is shown in Figure 1a as being installed at various sites on an Internet network. For purposes of illustration, a service provider site 00, as one data node, is shown connected by transmission media T1 to a backbone link site 04. One or more backbone link sites 04, as another data node or other data nodes, may be used for sending and receiving messages through the network. Local site 06 is shown here as a data node connected to the network formed by one or more backbone links 04 via transmission media T2. Local site 06 might be a

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*b3* corporate firewall & gateway site connected to multiple user stations 08 as other data nodes inside an internal corporate network with a local area network as transmission media T3 or it could be a local service provider providing dial-up services to user stations 08 over transmission media T3. Also shown in this Figure 1a is a content provider site 02 as yet another data node.

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Please replace the paragraph beginning at page 12, line 4 with the following:

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*b4* [As] In a preferred embodiment, as shown in Figure 1b, a storage unit 14 [may comprise] comprises a single storage unit cache method memory device 14 in a cache management system 10a. Cache management system 10b [depicts] comprises a large magnetic recording disk array that acts as a cache memory device 14, such as a redundant array of independent or inexpensive disks in a single (RAID) system or multiple RAID systems installed at the site. [A preferred] Another embodiment might use even larger disk arrays as a cache memory device such as one or more of EMC Corporation's (of Hopkinton, Mass.) Symmetrix™ disk array storage devices having as much as 1.1 gigabytes of storage for large backbone link sites 04, such as shown in cache management system 10c of FIG. 16.

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Please replace the paragraph beginning at page 12, line 14 with the following:

As will be apparent to those skilled in the art, other types of fast random access storage media can be used as storage units 14, such as magneto-optical disks, or massive random access memory arrays. In whatever form, such storage devices in a given mode act as cache memory device that are coupled to the data network.

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Please replace the paragraph beginning at page 18, line 2 with the following:

Referring now to Figure 2b, the overall logic of the configurator of the present invention is shown. Here, step 24 from Figure 2a is expanded to show the logic of the <sup>14</sup> ~~logic of the configurator, which~~ configurator. [It is] ~~(These steps)~~ act as a selector means for selecting one cache memory management method <sup>15</sup> ~~are essentially a~~ series of decision blocks, for analyzing the data supplied by the operator or by a script or a parameter list or a configuration message. Where a processing block is shown in Figure 2b, those skilled in the art will recognize that different types of setup and initialization are being performed <sup>16</sup> in each process block. Switches may be set, addresses or indexes initialized and so on. The configurator, at decision

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(b)(4)

block 24a checks to see if forms will be handled in a store-through manner (as described below.) If yes, processing needed to effectuate that is performed at step 24b and the configurator proceeds next to decision block 24c to see if data security is to be provided. If yes, processing for that is done at step 24d. As will be apparent to those skilled in the art, various types of protection schemes could be implemented for data that will be stored in the cache, from a simple scheme, such as password protection, to more elaborate protections such as encryption.

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Please replace the paragraph beginning at page 15, line 18 with the following:

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(b)(1)

Returning to the flow in Figure 2b, the system checks, at decision block 24e, to see whether any kind of indexing cache management method is selected. If it is, processing for the indexing method is done at step 24f. Next, the system determines whether a B-tree structure cache management method will be used, at decision block 24g. If so, processing for that is done at step 24h. Proceeding with Figure 2b, at decision block 24i the configurator checks to see if a usage [caching] based cache management method is selected. If so, step 24j

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(b7)  
processes the usage [caching option] based cache management method. Still going through Figure 2b, at decision block 24k, the configurator checks to see whether any pre-fetch cache management method option has been selected. The processing at step 241 might include the initial use of a web-crawler or robot to fetch initial pages. (See description below for further discussion.)

10 Please replace the paragraph beginning at page 20, line 8 with

10 <sup>19</sup> <sub>14</sub>  
the following:

Now in Figure 2a, once the cache methods selected for the site have been configured, the present invention follows the general flow depicted. At decision block 26, the configurator asks whether data has been requested. If not, the present invention enters a wait state at step 32, until a request comes in. As will be apparent to those skilled in the art, an alternative embodiment could create a task or subtask that is activated only when data requests are made and is suspended at other times. As will also be apparent, step 26 monitors operations at the data node. When data is requested it initiates operations by which the request is processed.

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Please replace the paragraph beginning at page 30, line 7 with  
the following:

In Figures 10a and 10b, a store-through method of cache management is shown for use with interactive forms such as form f1 shown in Figures 14 and 15. Using any of a number of existing HTML interpreters or parsers (programs that analyze the HTML text present on a page to determine its contents), [the configurator checks] a data request is checked for the presence of forms at step 26, as shown in Figure 10a. If the data is a form, no check is made to see if it is already in the cache, since it is presumed that forms must be filled out freshly each time. Thus, at step 26a, the check is made to see if the data contains a form. If it does, the method proceeds to step 34 (of Figure 2a) and a request is made that a new copy be transmitted. If the request does not contain a form, the method proceeds to decision block 30 (in Figure 2a) to see if the data is already in the cache.

Please replace the paragraph beginning at page 31, line 6 with the following:

In another preferred embodiment, security "doorways" are provided in cache management system 10, as shown in Figure 10b.

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Since such security is likely to include the use of some interactive form, the processing shown in Figure 10a is further modified to perform the logic shown in Figure 10b. Here, once it is established that a form is being transmitted, at step 26a, a check is made [at step 26e] to see if the form's contents "open" the doorway. [More specifically, a] A check is made at step 26e to see if the doorway is closed. If it is, at step 26e-1 the entries from the form are checked to see if they are valid for opening the doorway. If they are -- that is, the userid and password have been accepted as valid, in this example -- then that page and those below in the index hierarchy are so marked at step 26f to enable this userid to store and access data in the cache. Once the "doorway" has been opened, the operation of the method proceeds to step 26g to exit to step 30 (in Figure 2a) to see if the protected data is already in the cache. On the other hand, if the form's contents do not open the doorway, that is the userid and password have not been accepted as valid in this example, then the method [okay??] proceeds via the "NO" output from [question block] step 26e-1 to step 26b, and from there to step 34 in Figure 2a where [is] it then proceeds in accordance with the flow diagram of Figure 2a.

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8/  
Page 33 after line 9 insert the following paragraph:

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Sub C1  
B11

FIG. 1c depicts the organization of a typical cache management system 10 and will be apparent to a person of ordinary skill in the art from the previous description. Specifically the cache memory management system includes a control device or cache memory manager 12 and a storage unit or cache method device 14. The cache memory device 14 includes a cache method storage device 100 that stores the various cache methods such as those described in a cache method storage module 100 that stores the various cache management methods such as the store through index caching and other methods shown in FIG. 2b. The cache memory manager 12 includes a method selector module 101 that contains the various controls outlined in FIG. 2B, particularly as shown in FIG. 2B that select a cache memory module and initiate its processing. A method storage module 102 will contain one or more of the methods of the cache management methods shown in FIGS. 3 through 12. A monitoring module 103 that performs the functions of step 26 in FIG. 2a. A command send and receive module 104 enables a device that will allow information to be sent to other data nodes or received from other data nodes for the purpose of establishing configurations within the specific data node, as previously described.

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Please replace the paragraph beginning at page 33, line 9 with  
the following:

*Sub C8*  
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*B12*  
Simplified embodiments of the present invention could also  
be implemented as UNIX® of Unix System Laboratories, Inc or  
Unix shell or Apple McIntosh® Applescript® of Apple Computer,  
Inc. scripts that execute in a server operating as one of the  
links in the network.

10 Please replace the paragraph beginning at page 33, line 14 with  
the following:

*B13* 15 As will also be apparent to those skilled in the art, the  
present invention could also be implemented in hardware  
circuits using application specific integrated [circuit (ASIC)]  
circuits (ASICS) or gate [array techniques] arrays.